SPECIAL NOTE FOR SOIL EMBANKMENT AND SUBGRADE QUALITY CONTROL/ QUALITY ASSURANCE

This Special Note will apply when indicated on the plans or in the proposal. Section references herein are to the Department's 2004 Standard Specifications for Road and Bridge Construction.

1.0 DESCRIPTION. Provide and perform quality control and process control testing for soil embankment and subgrade as needed. All requirements of the Standard Specifications and testing required in the Department's Field Sampling and Testing Manual apply unless specifically modified herein.

2.0 MATERIALS AND EQUIPMENT.

2.1 Quality Control Plan (QCP) Personnel. The Primary duty of the QCP personnel on the project is implementing the QCP. Provide Qualified Soil Embankment Grade and Drain Level 1 Technicians to be present at all times during embankment and subgrade construction and to be responsible for performing quality control and process control testing. The qualification of the Technicians will be awarded by the Kentucky Transportation Cabinet. Interim status may be granted to unqualified technicians on a case by case basis. The Engineer can require retesting of certified personnel or requalification when deemed necessary. Personnel must have authority to stop embankment construction when tests do not pass density and moisture measurements.

2.2 Testing Equipment. Provide suitable equipment for the determination of soil density and moisture (KM 64-412), One Point Proctor (KM 64-512) and Soil Proctor (KM 64-511). Additionally, make this equipment available to the Department for Quality Assurance Testing.

3.0 CONSTRUCTION.

3.1 Coordination Meeting. Meet with the Engineer either as part of the preconstruction conference, or as a separate meeting, before the start of construction, and discuss the QCP. During the meeting, a mutual agreement of the plan details will be developed, including the forms for recording the operations, control activities, testing, administration, and the interrelationship of the QCP. Minutes of the coordination meeting shall be prepared by the QCP Manager, signed by the Contractor and the Engineer, and filed separately as part of the QCP. Subsequent conferences may be called by the Contractor or the Engineer to reconfirm mutual agreement and address deficiencies in the QCP or procedures which may require corrective action by the Contractor. Nothing in this section shall be construed to override the preconstruction conference or the preconstruction conference minutes.

3.2 QCP Submittal. Do not start work without an approved QCP. Submit the QCP to the Engineer on or before the preconstruction conference**.** After beginning work under the approved QCP, continuously prosecute the work according to the QCP. Obtain the Engineer’s approval before making any changes to the QCP.

A Quality Control Plan (QCP) outlining process to test Soil Embankment will be submitted. The plan shall include the following:

1) Construction Items covered by the Plan.
2) Tests to be performed.
3) Testing frequencies if different from Field Sampling and Testing Manual.
4) Sampling locations and techniques.
5) Documentation procedures for inspection and test records and accuracy, calibration, and re-calibration checks performed on production and testing equipment.
6) The personnel responsible for the Contractor's quality control. Include the name of the company official who will act as liaison with Department personnel and the names of Technicians who will direct and conduct the inspection program.
7) Assurance that a qualified Soil Embankment Grade and Drain Level 1 Technician will be present at all times during embankment and subgrade construction.

3.3 Testing. Test at the frequency outlined in the approved QCP. For embankment, use a minimum frequency of one density test per 2,000 cubic yards placed or every 2-feet in elevation, whichever occurs first. For bridge ends and subgrade, use the minimum frequency stated in the Field Sampling and Testing Manual. Perform at least one one-point proctor test per 8,000 cubic yards placed and whenever soil properties change.

Prior to placing the next lift, provide the Engineer the test result(s), proctor(s), and location(s) for the Department's evaluation. Obtain the engineer's concurrence before proceeding with the next lift. The Department may waive this requirement for short fills, those 250 linear feet or less in length.

Test embankment according to Section 206. Test subgrade according to Section 207. When the Engineer determines that the material can not be tested by nuclear density machine, the Department will perform quality control.

3.4 Documentation. Document all tests on form TC 63-47. Submit documentation to the Engineer within 7 working days after completing tests.

3.5 Quality Assurance (QA). The Engineer will conduct random QA inspections for the duration of the Contract; inspect the full spectrum of on-going construction activities; review the material and proctor used; observe the material's behavior under heavy equipment; review QCP documentation; compare the Department's inspections and testing results with the QCP results; and prepare a written report. When the Engineer's inspections or testing results show work to be outside of specification requirements or not in agreement with the QCP results, the Department may shut down that portion of the work or the entire project until the cause of the failure or discrepancy is determined and procedures are corrected. Additionally the Department may require excavation to lower lifts for additional testing

The Engineer performs density tests at 25 percent of the minimum testing frequency. Testing may be increased at the discretion of the Engineer. Testing will be performed at randomly selected locations without prior notification of the Contractor. Provided test results for wet density are within 5 pounds per cubic foot and moisture test results are within one percent and the Department's reviews are in agreement with the QCP results, the Department will use the Contractor's test results for acceptance.

3.6 Referee Testing. If a difference in test results and/or procedures for sampling and testing exists between the contractor and the Engineer which cannot be resolved, the Department Central laboratory or other mutually agreed upon independent testing laboratory will be asked to provide referee testing. The party found in error will pay service charges incurred for referee testing by an independent laboratory.

3.7 Dispute Resolution. The Department will prepare a written report describing the dispute, all subsequent actions, and the final resolution for inclusion in the project documentation.

3.7.1 Avoidance of Disputes. Make every effort to avoid disputes. Use partnering concepts to aid in preventing or resolving any dispute. Monitor as follows to ensure that all data are reliable, unbiased, and truly representative of the product quality:

1) Ensure personnel and equipment meet the specified certification requirements.
2) Ensure all testing locations are obtained according to KM 64-113, Sampling Materials by Random Number Sampling.
3) Ensure communication of test results between parties occurs within reasonable time limits.
4) Discuss all questions regarding the specifications, KM's, or sampling and testing procedures during the coordination meeting to clarify any confusion.
5) Resolve disputes at the lowest appropriate level of authority.

3.7.2 Procedures. When the Contractor's acceptance test results and the Department's verification test results are not within the specified tolerances, and a dispute is therefore unavoidable, use the following procedures to resolve the dispute**:**

1) Project Level Dispute Resolution. Together with the Engineer, attempt to determine the reason for the discrepancy at the project level by having testing personnel review previous tests and other possible factors.
2) Materials Central Laboratory (MCL) Level. If the dispute is not resolved at the project level, the MCL will conduct further investigation. In this investigation, the MCL will include the following, when applicable:

   a) Review of all available test data, including the following:
      - current disputed results;
      - prior acceptance testing data;
      - Contractor's process control documentation; and
      - Department's Independent Assurance (IA) sampling and testing results.
   b) Check of Contractor and Department calculations. Compare conflicting data by statistical means (e. g., F-test and t-test).
   c) Evaluation of Contractor and Department sampling procedures.

d) Inspection of the equipment setup, calibration, and maintenance.
e) Retesting of all retained samples available.
f) Monitoring of the specified testing procedures.
g) Evaluation of the history of performance of the Contractor and the Department personnel and testing equipment involved. Review of test results from previous projects. Review of the results of previous dispute resolutions.
h) Additional comparative or split-sample testing.

At the conclusion of the investigation, MCL personnel will make a recommendation of resolution to the Contractor and the Engineer.

4.0 MEASUREMENT. The Department will measure the QC quantity, for soil embankment, subgrade, and any other items of work the Contract specifies as QC, as Lump Sum. The Department will not measure the QCP, all actions and personnel required to carry out the QCP, all testing, all testing equipment, or any other work necessary to perform the specified QC/QA procedures for payment and will consider them incidental to this item of work.

5.0 PAYMENT.

5.1 QC. The Department will only pay for a quantity of one for all Quality Control conducted under the Contract.

5.2 Dispute Resolution. If the independent laboratory testing and investigation indicates that the Department's tests are correct, pay the cost of the investigation. If the independent laboratory testing and investigation indicates that the Department's tests are not correct, the Department will pay the cost of the investigation.

When the dispute is resolved at any level, and the Department's verification tests are correct, the Department will base the Contractor's pay on the Department's verification test results rather than on the Contractor's acceptance test results. When the Department's verification tests are not correct, the Department will base the Contractor's pay on the Contractor's acceptance test results as the appropriate Section or Subsection specifies.

Code	Pay Item	Pay Unit
----	QC for Soil Embankment and Subgrade	Lump Sum

March 1, 2004